

ABSTRACT OF THE DISCLOSURE

The present invention relates to a method for screening chemically modified mutant enzymes for amidase and/or esterase activity. This method includes providing a chemically modified mutant enzyme with one or more amino acid residues from an enzyme being replaced by cysteine residues, where at least some of the cysteine residues are modified by replacing thiol hydrogen in the cysteine residues with a thiol side chain, contacting the chemically modified mutant enzyme with a substrate for an amidase and/or a substrate for an esterase, and determining whether the chemically modified mutant enzyme exhibits amidase and/or esterase activity. The present invention also relates to chemically modified mutant enzymes and a method of producing them where one or more amino acid residues from an enzyme are replaced by cysteine residues, and the cysteine residues are modified by replacing at least some of the thiol hydrogen in the cysteine residue with a thiol side chain to form the chemically modified mutant enzyme. The thiol side chain is selected from the group consisting of  $-\text{SCH}_2(p\text{-CH}_3\text{-C}_6\text{H}_4)$ ,  $-\text{SCH}_2(p\text{-OCH}_3\text{-C}_6\text{H}_4)$ ,  $-\text{SCH}_2(p\text{-CF}_3\text{-C}_6\text{H}_4)$ , and  $-\text{SCH}_2(2,4\text{-diNO}_2\text{-C}_6\text{H}_3)$ .

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